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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,141	09/30/2003	Peramachanahalli S. Ramkumar	884.A45US1	6415
21186 7590 02/07/2008 SCHWEGMAN, LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER PHAM, CHRYSTINE	
			ART UNIT 2192	PAPER NUMBER
			MAIL DATE 02/07/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/676,141	Applicant(s) RAMKUMAR ET AL.	
	Examiner Chrystine Pham	Art Unit 2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 3, 2007 has been entered.
2. This action is responsive to Amendments filed on July 3, 2007. Claims 1, 8, 15, 19 and 22 have been amended. Claims 1-25 are presented for examination.

Response to Arguments

3. Applicant's arguments filed July 3, 2007 have been fully considered but they are not persuasive.

Applicant essentially asserts that Tseng does not teach "maintaining mappings between physical and logical resources" (Remarks, page 7, 3rd paragraph). However, the Examiner strongly and respectfully disagrees. As has been clearly established in the previous Office Action (page 3); Tseng discloses a system and method for dynamically switching between software simulation and hardware emulation (i.e., ICE) to verify (i.e., debug) electronic systems (i.e., user's custom circuit designs) (see at least *software simulation, hardware*

acceleration, ICE, different modes col.2:40-col.5:31). Tseng further discloses generating both software model and hardware model to represent the user's custom circuit design for simulation purposes (see at least *hardware, software models, custom circuit design, simulation* col.2:56-66). In col.4:24-65, Tseng explicitly discloses the simulation system includes a software control logic, and a hardware logic element. More specifically, col.4:28-32 explicitly reads "The **software control logic** is coupled to the **software model** and the **hardware logic element**, for controlling the operation of the software model and the hardware logic element" (Emphasis added). Col.4:36-38 explicitly reads "The **hardware logic element** is also coupled to the local bus and **include a hardware model**" (Emphasis added). Col.4:62-65 of Tseng specifically reads, "When the **software model** detects an **active clock edge**, it sends an enable **signal** to the **hardware model** to activate data evaluation. The **hardware model evaluates the data** and then waits for the new incoming data which may be evaluated at the next active clock edge signal detection in the software model". Needless to say, each active clock edge (i.e., state) detected in the software model (i.e., logical resource) inherently maps to corresponding data (i.e., physical resource) evaluation in the hardware model.

Applicant further asserts that "Tseng does not discuss stopping a mode of operation and using mappings to transition to a next mode of operation" (Remarks, page 7, 3rd paragraph; also see *accessing the mappings* on lines 7-8

of claim 1). However, as discussed above, when an active clock edge (i.e., state) is detected in the software model (i.e., software simulation), a trigger (i.e., enable signal) is sent to the hardware model to activate data evaluation (i.e., hardware emulation). Needless to say, without using/accessing the mappings, it would be impossible to verify the circuit design, which is collectively represented by both software and hardware models, that are meant to be manipulated and synchronized (i.e., mapped) via software simulation and hardware emulation during a single debug/test session (see at least col.1:27-44).

4. In view of the foregoing discussion, rejections of the claims under 102() and 103(a) are considered proper and maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Tseng et al. (US 6,009,256 A, "Tseng").

Claim 1

Tseng teaches a method, comprising:

interacting with a debugging interface for receiving instructions to debug during a debugging session (see at least *user, test/debug, SEMulation* col.7:35-60); maintaining coherence between a simulation mode and an emulation mode (see at least *Semulator, single engine, modes, simulation, hardware acceleration, ICE, switch* col.2:40-56) by maintaining mappings between physical and logical resources during the debugging session; and dynamically switching between the emulation mode and the simulation mode during the debugging session (see at least *run-time flexibility, user, switch, modes* col.2:40-col.3:15) by stopping a current mode of operation during the session and accessing the mappings to switch to a new mode of operation during the session (see at least col.1:27-44; 2:52-col.5:61), wherein the debugging session interactively debugs the instructions and can be switched between the emulation mode and the simulation mode dynamically on user instruction or automated instruction (see at least *switching, modes, manually, automatically* col.3:9-45; col.8:25-42; col.9:45-53; col.9:7-13).

Claim 2

The rejection of base claim 1 is incorporated. Tseng further teaches debugging a number of the instructions by a simulator while in the simulation mode (see at least col.3:42-45).

Claim 3

The rejection of base claim 1 is incorporated. Tseng further teaches debugging a number of the instructions by an emulator while in the emulation mode (see at least col.3:42-45; col.4:54-65).

Claim 4

The rejection of base claim 1 is incorporated. Tseng further teaches wherein interacting further includes displaying, by the debugging interface, a current state of a resource associated with the instructions during the debugging session (see at least col.4:2-65).

Claim 5

The rejection of base claim 1 is incorporated. Tseng further teaches wherein interacting further includes receiving, by the debugging interface, manual commands to debug the instructions during the debugging session (see at least col.5:18-40; col.9:7-13).

Claim 6

The rejection of base claim 1 is incorporated. Tseng further teaches wherein interacting further includes receiving, by the debugging interface, script commands to debug the instructions during the debugging session (see at least *switching, modes, manually, automatically* col.3:9-45; col.8:25-42; col.9:45-53; col.9:7-13).

Claim 7

The rejection of base claim 6 is incorporated. Tseng further teaches wherein interacting further includes receiving by the debugging interface, a switch command to process the switching between the emulation mode and the simulation mode (see at least *switching, modes, manually, automatically* col.3:9-45; col.8:25-42; col.9:45-53; col.9:7-13).

Claims 8-23

Claims recite limitations, which have been addressed in claims 1-6, therefore, are rejected for the same reasons as cited in claims 1-6.

Claim 24

The rejection of base claim 23 is incorporated. Tseng further teaches wherein the debugging session manager selectively determines which of the instructions that the simulator and emulator process based on commands received from the debugging interface (see at least *switching, modes, manually, automatically* col.3:9-45; col.8:25-42; col.9:45-53; col.9:7-13).

Claim 25

The rejection of base claim 23 is incorporated. Tseng further teaches wherein the debug session manager passes control between the simulator and the emulator as many times as is requested during the debug session (see at least *switching, modes, manually, automatically* col.3:9-45; col.8:25-42; col.9:45-53; col.9:7-13).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chrystine Pham whose telephone number is 571-272-3702. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



TUAN DAM
SUPERVISORY PATENT EXAMINER